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ABSTRACT

Responding to the call for higher education to adopt a new paradigm in managing its administrative processes, an Institutional Research Office at Delaware County Community College (DCCC) in Pennsylvania made a two-year effort to use a Total Quality approach in its management. Total Quality Management is a Japanese movement based on the teachings of American quality experts such as W. Edwards Deming and Joseph M. Juran and values continuous process improvement, obsession with customers, long term thinking, and data-driven management. At the DCCC Research Office, management worked on three particular areas. The first was identifying customer needs for information. Through data collection and a tracking process 238 requests were tracked and three improvements resulted. Second, the office studied the processes used for the annual high school senior survey, and was able to eliminate "complexity" (i.e, steps that add no value to the final product or service) thereby completing the project as scheduled without additional staff. Third, a focus on continuous process improvement forced a change in the day-to-day mode of management. Finally, under direction from an institution-wide effort the entire management approach has changed. Over all results include the office's ability to handle an increasing workload without an increase in staff or other resources. The report contains 13 references and 4 charts. (JB)

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Using Total Quality to Better Manage an Institutional Research Office

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This paper was presented at the Thirty-First Annual Forum of the Association for Institutional Research held at The Westin St. Francis, San Francisco, California, May 26-29, 1991. This paper was reviewed by the AIR Forum Publications Committee and was judged to be of high quality and of interest to others concerned with the research of higher education. It has therefore been selected to be included in the ERIC Collection of Forum Papers.

Jean Endo
Chair and Editor
Forum Publications Editorial
Advisory Committee

Abstract

Sherr's call for higher education to adopt a new paradigm in managing its administrative processes has sparked interest in how the teachings of Deming and others can be translated to the educational sector. This paper describes a two-year effort to use Total Quality in managing an Institutional Research Office. The results include the Office's ability to handle an increasing workload without an increase in staff or other resources. The paper is intended for an audience with some awareness or knowledge of Total Quality.

Introduction

The American public is increasingly skeptical about the quality of goods and services generated by the nation's economy. Lack of confidence in American products has been repeatedly documented during the past decade (Garvin, 1987), and this attitude is spreading well beyond the manufacturing sector to include companies in the service sector, government agencies, and educational institutions.

The philosophy and methods of Total Quality Management have transformed many Japanese companies during the past 40 years (Ishikawa, 1985). During its early years, the quality movement in Japan drew heavily from the teachings of American quality experts such as W. Edwards Deming and Joseph M. Juran. Although many of the quality methods and tools were used in United States industry during World War II, American business did not begin to integrate the quality paradigm into management philosophy until the past decade (Walton, 1986). Many United States pioneers in Total Quality Management were manufacturing firms. The dramatic decline of the manufacturing sector has been an an important force for change in this sector of the economy.

Fueled by the economic and political climate, interest in Total Quality Management has spread to service companies and to the public sector. Banks, hospitals, utilities, government agencies, and educational institutions are learning about and attempting to apply Total Quality Management. As the global

economy becomes a stronger impetus for change, the service sector is relinquishing its cavalier attitude toward quality.

Higher education is facing strident demands for accountability to its constituencies and for evidence of the quality of its endeavor. The crisis of confidence is only one of many crises looming on the horizon. Chaffee (1990) has pointed to the declining high school senior pool, the impending faculty shortage, the accelerating cost of higher education, and the fiscal problems plaguing federal, state, and local governments. She warns that failing to address the credibility gap and continuing to ignore stakeholders' demands for change could result in higher education's losing "...the adult student market that saved ...us in the 1970's and 1980's" (Chaffee, 1990, p. 349). As educators recognize that perilous times lie ahead, interest in Total Quality Management accelerates. A recent survey identified 25 colleges and universities actively attempting to apply Total Quality Management principles (Coate, 1990), and 1990 marked the first national symposium on the role of Total Quality Management in education (Greater Philadelphia Chamber of Commerce, 1990).

Sherr has described the benefits Total Quality Management offers higher education. The philosophy is a humanistic one, because it uses the knowledge every employee has about his or her work. It teaches each employee how to assess processes, measure quality, and engage in continuous improvement. It offers a management paradigm consonant with the stated values of the educational community (Sherr, 1989; Sherr, 1990; Sherr & Lozier, in press). Contrary to the commonly held notion that improving

quality necessarily increases costs, Total Quality Management lowers long-term costs while increasing productivity (Deming, 1986). Total Quality Management offers education a way to conserve resources while improving the educational process.

Cornerstones of Total Quality Management

Total Quality Management values continuous process improvement, obsession with customers, long term thinking, and data-driven management. The foundation of continuous process improvement, or Kaizen (Imai, 1986), shifts management's focus from inspecting the outputs of a process to studying the process itself and how it operates. This encourages the type of improvements that can be made "upstream" to prevent mistakes and errors from occurring. Imai stresses the importance of replacing an obsession with outcome indicators (results-oriented criteria) with an obsession with process indicators (process criteria). Improvement in a product or service follows naturally as a result of this focus on prevention.

Total Quality Management is driven by the customers of each process. It strives to understand and anticipate customers' needs and to shape the processes in an organization to continually improve the match between the quality generated by a process and the actual needs of customers.

Total Quality Management requires long term thinking. American managers tend to focus on the short term, to expect results immediately (if not sooner), and to expect outcomes of staggering size. Total Quality Management cannot take root in such an environment. Continuous process improvement emphasizes

the steady accumulation of incremental improvements in processes. Large improvements may occur in the early stages of implementation, but eventually processes become more finely tuned and additional improvements are incremental in nature. In this advanced stage of process improvement, standardization of processes must occur, to prevent backsliding to an earlier, less improved state.

Total Quality Management is data driven. Attempts at process improvement should not take place until data have been gathered on the process. If the data show the process to be a stable one, it is appropriate for management to consider improving the process. If the data indicate an unstable process, the process must be stabilized before any improvement efforts are appropriate. The employees who operate the process in question usually can identify sources of instability in the process. Thus, the data guide managers in choosing appropriate actions. This work of data gathering, called the Plan-Do-Check-Act (PDCA) cycle (Deming, 1986), replaces management by opinion.

All of the tools and methods of Total Quality Management are used in the service of these four cornerstones. The tools of Total Quality Management are easy to learn. Some, such as run charts and flow charts, are familiar to most people. Others are well known to researchers (histograms, scatter diagrams). The tools used most often are simple, easy to learn, and extremely powerful. However, it is extremely difficult to practice Total Quality Management.

The most common barrier to practice is the failure to understand the philosophical difference between traditional

management style and the manager's new role in Total Quality Management. A radical transformation is required for most managers to see the applications. To stimulate the transformation in thinking and to help identify applications to Institutional Research, this paper describes how Total Quality Management is being applied in one Institutional Research office.

Example 1: Identifying Customer Needs

Problem. The Research Office at Delaware County Community College has traditionally prepared an annual plan describing the projects for the year and how the projects fit into the college goals. However, "ad hoc" inquiries continually come into the office, interrupting progress on projects to which the Office has committed itself. Timelines for major projects were difficult to develop, because the Office lacked information on the volume and patterns of inquiries. After the college committed to Total Quality Management, identifying the Office's internal customers and assessing their information needs became an additional concern.

Method. To address these concerns, in July 1988 the Office began collecting data on each inquiry or request for service, as an unobtrusive means of identifying internal and external customers and assessing the nature of their information needs. A tracking form was developed to indicate the date received, the customer name and type, the type of request, how the request was met, resources used (software package, database,etc.), and date completed. The data are analyzed periodically and graphed to study patterns over time.

Results. During the first year 238 requests were tracked. Some of the results were unexpected. For example, the month of January had the highest volume (30) and the highest number of requests per working day (1.5). Staff perception had been that January is a lower activity month, and therefore a good time to schedule completion of pending projects. Continuation of the tracking has shown that January is not consistently the highest volume month, but it does consistently show a rebound from the November and December levels. Figure 1 shows the monthly volume from July 1988- February, 1991.

Impact. Three improvements resulted from the data collection. First, previously unidentified customer needs were revealed by the data. Depending on the need, we modified our distribution lists for existing reports, added new information to reports, or created new reports. Second, the data were used to monitor patterns of inquiry so that other projects could be scheduled around the expected volume of requests. The forms also help monitor and prioritize the ad hoc requests. Finally, the tracking forms have become a rich source of process documentation. We now have a central source to consult when different customers request the same information. This eliminates the redundancy ("re-work") of generating the same information over and over again. It also eliminates the time and effort previously required to recall how a particular request was handled in the past, because the tracking form documents how the information was generated (operational definitions of terms, etc.).

Research Office Requests

Monthly Volume

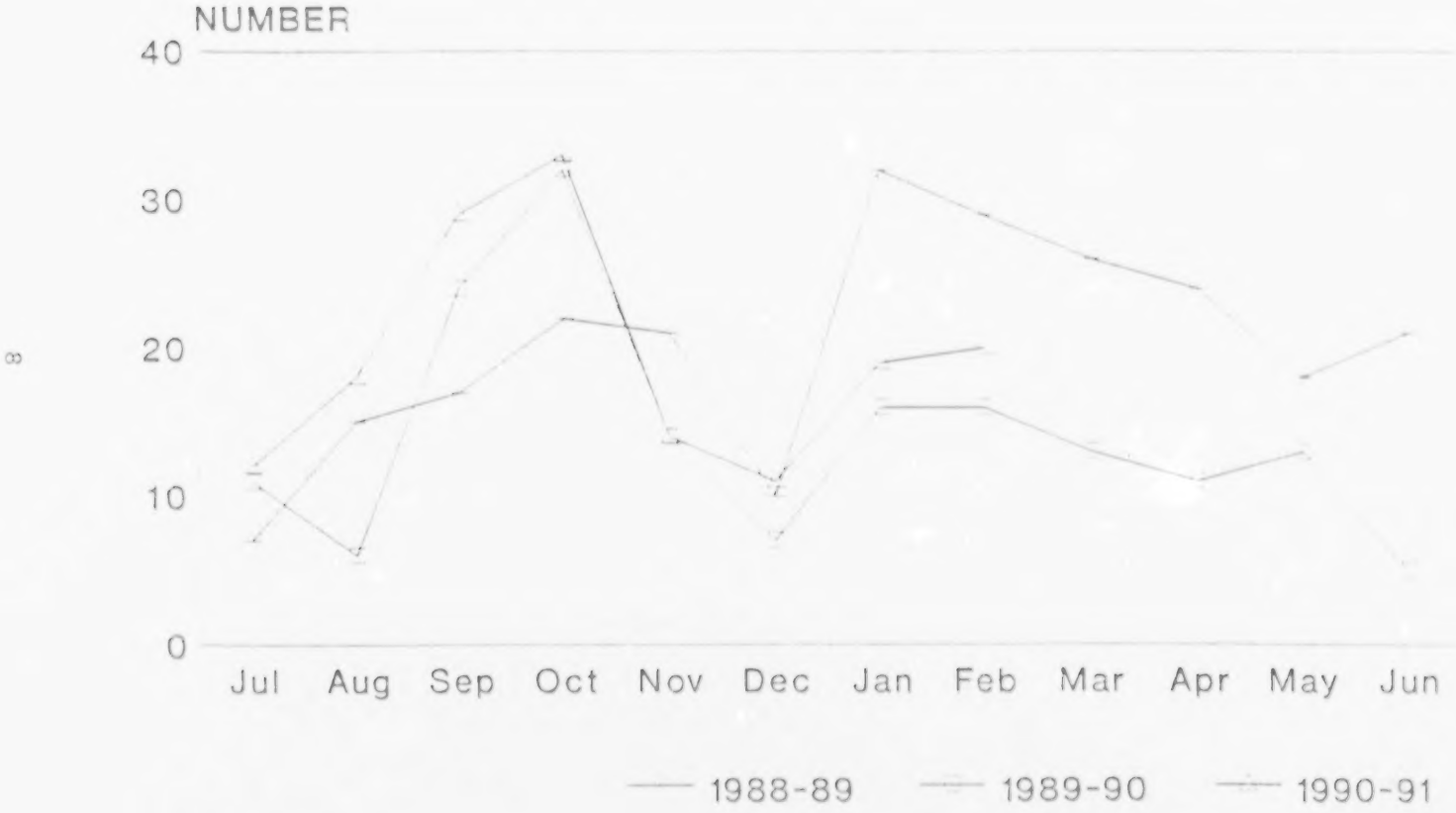


Figure 1

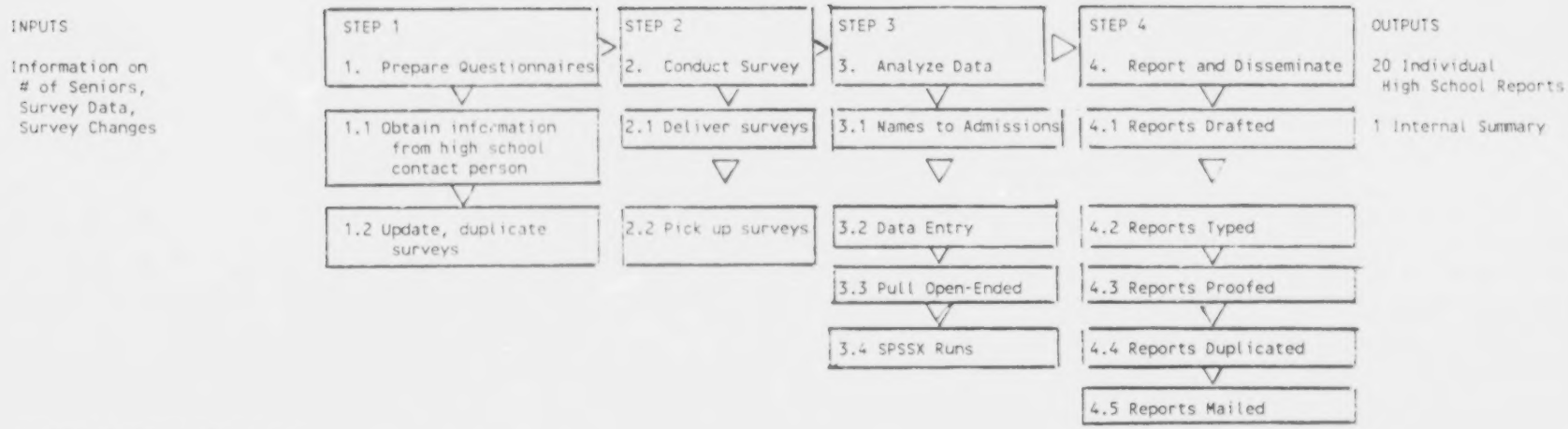
Example 2: Studying a process and eliminating complexity.

The Process. One of the first processes selected for study was the annual high school senior survey, which is conducted in the 20 high schools in the college's service area. This process was chosen in part because it seemed to be requiring more time each year to complete. By 1988 it had virtually become a year-round project. A top-down flow chart was used to outline the basic steps in the process, and these steps were transformed into a matrix to document the progress in completing each step for each school (see Figures 2 and 3). The initial objective was simply to have a documented, standardized process. The matrix helps prioritize work on the 20 surveys and it saves time previously spent organizing daily tasks. However, in 1989 the matrix revealed a major bottleneck in the report preparation step. This step was completed four months later than anticipated, and it would have taken longer if a temporary part time person had not been hired.

The bottleneck was the process step of transposing the computer-generated survey results to a draft report and updating the previous year's report via word processing. This transposition step represented what Fuller (1986) refers to as "complexity" -- it added no value to the final product or service. To the contrary, the step introduced potential for error, because it was a manual operation. The introduction of potential error generated an extra inspection step (i.e., checking the the numbers in the report). One of the uses of flow

TOP-DOWN FLOW CHART

High School Senior Survey



NOTES/ISSUES/COMMENTS/PROBLEMS:

Supplier:
Admssions Office
High School Contacts
Seniors

Customers:
High School Counselors
J. Parker
J. Piorkowski
L. Scott
R. Di Serafino

Figure 2

KKM:RESOP/TQFCHS.WK1

ACTIVITY MATRIX

	QUESTIONNAIRES									DATA					INDIVIDUAL HS REPORTS					
High School	Exact #	Resp #	Resp %	Changes	Date Needed	Typed	Dupli-cated	Delivered	Returned	Name/Address/ Interest to Admissions	To Data Entry	Data Entry	Pull Open Ended	SPSSX Run	Report Drafted	Typed/ Proofed	Dupli-cated	Mailed (5)	MAH, JP, Joe, Lou, Rick	How Admin-istered?
A																				
B																				
C																				
D																				
E																				
F																				
G																				
H																				
I																				
J																				
K																				
L																				
M																				
N																				
O																				
P																				
Q																				
R																				
S																				
T																				

Figure 3

charts in Total Quality Management is to distinguish between steps representing "real work" and those representing "complexity" (Fuller, 1986). Processes can be improved by eliminating complexity.

Eliminating complexity. We identified an option available from our statistical software supplier (SPSS) that would generate a report format approximating the desired format. The Administrative Computing Center helped the Research Office develop a process for saving the output as an ASCII file and importing it into the word processing software for final "polishing". This new approach did require the Office to set aside time to complete the programming required to run the new statistical procedure (about 1-2 days). However, in subsequent years the programming effort will be minimal.

Impact. The 1990 survey reports were completed as scheduled, without requiring additional staff. In fact, the Office generated an additional mini-report for each high school and completed the project at a time when one staff member was released to help conduct Total Quality team training.

Example 3: Continuous Process Improvement (Kaizen).

Focusing on continuous process improvement has forced a change in the day-to-day mode of management in the Research Office. No process is assumed to be operating in a satisfactory fashion. Ideas for improvement are gathered during each cycle of a project, reviewed prior to repeating the project, and implemented whenever feasible. The emphasis is on small, incremental changes and improvement, not major innovations. This is radically

different from the "if it ain't broke, don't fix it" philosophy. Once processes have been assessed and necessary improvements made, the process is standardized by documenting the steps and procedures. A Research Office systems manual contains this documentation.

Example 4: Transformation in Management

The preceding examples were isolated, narrowly focused first attempts to apply Total Quality Management. In 1991 Delaware County Community College entered a new phase in Total Quality Management. As part of top management's effort to use Hoshin Planning (King, 1989) to infuse Total Quality Management throughout the institution, an administrative retreat was held to introduce a Kaizen-derived view of administrators' functions within the college. This support from the president and his cabinet is driving a college-wide effort to transform the organization.

The specific plans for 1991 are for each office to: (1) identify its mission, customers, and suppliers; (2) identify its mission and its key processes and develop top-down flow charts of each key process; (3) identify quality characteristics for each key process and develop performance measures to assess these characteristics; (4) develop a data collection plan for monitoring the performance of each key process. In subsequent years the work will be extended to other processes in each area, with the goal of eventually having all processes monitored.

The Research Office staff developed a statement describing the mission of the Office, how it relates to the college mission, and the basic beliefs and guidelines to be followed in carrying out

the mission. This work provided an opportunity to fully explore each staff member's view of the office's function. Moreover, it revealed an apparent conflict between the mission of providing information and the value of assuring confidentiality. Staff wrestled with the paradox, developed an operational definition of confidentiality, and reached consensus on Office policy on this issue.

The office staff also listed all of the Office's processes and rated each process to determine which are "key" processes. The Office's customers were also asked to rate the importance of each Research Office process. Staff and customer ratings agreed on three of the key processes. Customers attached the highest importance to "Providing information, assistance, research, and statistical support". This process received a mean rating of 2.85 on a 3-point scale; it also had the least variability (a standard deviation of .36, half that of the other processes). The irony of this result is that this process does the work of responding to the "ad hoc" inquiries described in Example 1. This service had never been formally acknowledged in our annual planning, and traditionally had been viewed as interrupting our "real work". Staff learned that this service is the one most highly valued by the Office's internal customers, and that it is a central part of the Office's real work.

Top-down flow charts of key processes are being used to identify problem areas and to focus process improvement efforts. Figure 4 is an example of one of these flow charts. During the

F L O W C H A R T

Updating Key Indicators

INPUTS	STEP 1	STEP 2	STEP 3	STEP 4	OUTPUT
Raw Indicator Data for Current Year	Update Indicator data >	Generate Flags, Charts >	Update Matrix and Summary >	Distribute	Summary Report
	LOTUS files: (See list in systems manual)	Same LOTUS files	Files: WS MH/KIM1 ...2 ...3 ...4 Summary	List: D. Burgham M. Heverly T. Lugg J. Parker S. Smith	
	Jan-Feb	Jan-Feb	March		

ISSUES/NOTES:

Suppliers: Other office processes (for pilot)	What to do with programs with missing data?	Flagging System continues to evolve	Need to educate customer
	Document operational definition, source on each indicator page		Need to develop link to program review
			Need to continue to refine and modify indicator set

Developed at Staff Meeting: 2/28/91

Figure 4

summer and fall of 1991 customers will be asked to help identify the quality characteristics of processes, and performance measures will be created to measure quality of the key processes.

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